MANPRINT
Newsletter

Spring/Summer 2005

The Director's Corner

The sad (and happy) news that I have to report is that Marjorie Zelko will be retiring in early June. Marjorie, also known as the "Princess of MANPRINT," joined the MANPRINT organization in June of 1987 and for the past 18 years has been dedicated to the program. Her service has been distinguished. When I arrived to MANPRINT, it was 8 days before 9/11. The ensuing disorder was less than a conducive environment in which to learn my new job. I will never forget the kindness that Marjorie showed me during those days and the unbelievable help that she provided to help me learn the job. Not only was I able to learn the procedures that we had to perform to be a functioning office, but more importantly, I learned that the essence of MANPRINT is the belief that what we do will impact not only on soldiers' ability to do their job, but also on their lives. The finest tribute that I am capable of devising is to say that no one is more devoted or has worked harder for the welfare of the soldier than Marjorie Zelko. I know you join me in wishing her every success and happiness as she starts on a new career as an Alpaca rancher in Tennessee!

In the last Newsletter, I reported that Dr. Beverly Knapp was the acting deputy director. Bev is now officially the deputy, and doing a great job. Welcome to the MANPRINT family.

Our web site continues to develop. You can now find our new 2 minute MANPRINT video on the web site. Also, you will find a completely revised *MANPRINT Handbook* on the web site. Mrs. Zelko took the lead role in this revision. As you read the Handbook, please remember that we consider it a "living" document. We invite and accept revisions, so if you have recommendations, please send them to Crystal Newsome.

Many of you should attend the Human Systems Integration Symposium (HSIS). HSIS is being held 20-22 June near the Pentagon. Although the symposium is primarily organized by the Navy, there is strong participation from the Army and Air Force. Only the last day of the symposium really concentrates on Navy issues, and even these issues have relevance to the other Services.

The recent issue (Winter 2005) of *Ergonomics in Design* contains the article "Predicting and Evaluating Misuses of Products." I know that the practice of ergonomics is difficult enough just to account for all the variations of how a product is supposed to be used. But misuse is still a legitimate and important concern. Here are a few examples from my own experience:

- Radar operators who used the unit to heat their coffee and, incidentally, received exposure to radiation while doing so.
- Armored vehicle operators sitting in a cramped turret, who might remove the foot guard to stretch their legs and hope that no one moved the turret.
- Missile launcher crewmen who, against instructions, might fall asleep in a sealed crew compartment even through they risked oxygen deprivation by doing so.

Michael Drillings,
Director for MANPRINT

Contents.

The Director's Corner 1
Article: Human Systems Integration (HSI) Acquisition Reform and its Implications on MANPRINT From a Human Factors Engineering Perspective, Thomas W. Dawson, Army Research Laboratory 2
Article: Memorandum for See Distribution: Army Systems Acquisition Review Council (ASARC), Claude M. Bolton, Jr. 4
Meetings of Interest 6
MANPRINT Central Contact Information 7
MANPRINT Training Schedule 8
Did You Know? 9
MANPRINT Information 10
Reader's Response 11

Human Systems Integration (HSI) Acquisition Reform and Its Implications on MANPRINT From a Human Factors Engineering Perspective

By Thomas W. Davis, Engineer (Human Factors)
Army Research Laboratory

Overview

Acquisition Reform initiatives encourage the innovative approach to satisfying the Government's requirements for HSI.

This approach includes the conduct of Front-End Analysis to address the identification, analysis and integration of requirements, which will drive the man-machine interfaces, procedures, environments, and equipment ergonomics. Ensure that the Front-End Analysis includes the; 1) Identification of emerging system missions, conditions, and functions scenarios; 2) Analysis of System Requirements by mission, condition, and functions scenarios; 3) Identification of high drivers; 4) Identification of the role of Man verses Automation; 5) Analysis of Workload and Manning requirements; 6) Conduct skills requirements analysis; 7) Conduct system safety requirements analysis; and 8) Integrate and prioritize system manpower requirements and the military's ability to support them (adapted from the Navy's HSI literature).

Among the recommended principles and practices to avoid dictating Government-unique approaches that could increase industry compliance costs are: the use of industry best business practices, which encompasses HSI, and procurement of commercial-off-the-shelf (COTS) systems when feasible.

In this regard, COTS systems have become an integral part of the DOD

given system. From a budgetary viewpoint, training or, retraining the human component of the system may seem the logical choice; especially for COTS systems. However, from a human factors engineering perspective, this can be counterproductive to the efficiency of the overall system, due to degraded human performance (e.g., increased error rate).

One important consideration that is often overlooked is the physiological and psychological stress that occurs

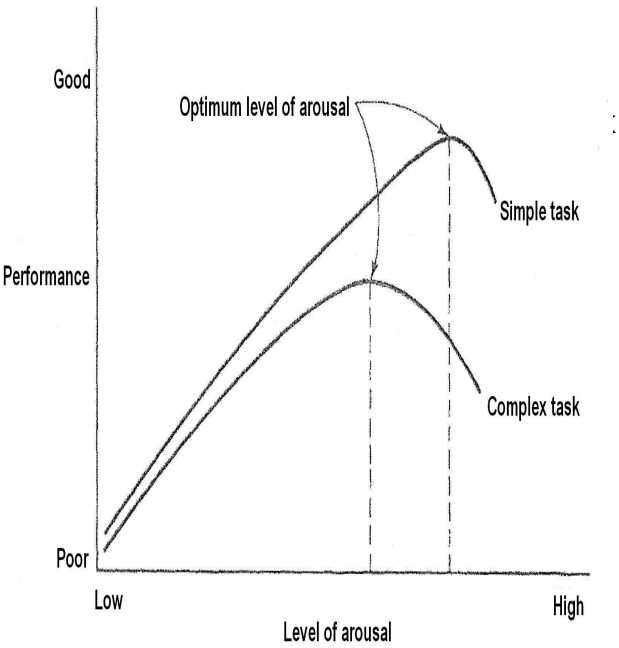

Figure 1. The Yerkes Dodson Law

consideration that must be factored in when conducting trade-off analyses, in terms of workload, is the impact of stress. Especially, as military weapon systems are becoming more automated and a critical element of the human's role is monitoring the system functions and decision making.

Trend two – there tends to be a inconsistency across design platforms between different operational locations within a program. For example, the meaning of one visual feedback device, based on color, may have a different meaning depending on the site or location. Inconsistencies such

Continued from page 2

been ovserved that some sytems/facilities are utilizing visual aids that are not congruent with our color scheme. For example, a tactical operational facility utilized the color purple as a visual stimuli to indicate danger. The more appropriate color, in this case, would be red; since we are conditioned to relate this color with stop of danger.

One possible contributing factor to the inconsistency across systems, facilities and operational locations is the fact that the "MIL-Standards," (e.g., MIL-STD-1472, MIL-HDBK-46855 and so forth) are now utilized as guides rather than standards to facilitate the use of Industry best business practices.

Implications on MANPRINT

DoD Instruction 5000.2 establishes the framework for acquisition programs as illustrated in Figure 2. Given the increased utilization of COTS systems and industry best business practices, there are two fundamental questions that human engineering and MANPRINT specialist must consider: 1) What can we influence; and 2) when can we best influence it in the acquisition process and design stages. These questions needd to be

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specifications for systems; providing input related to the human-machine interface and the MANPRINT domains.

Summary

Given the current acquisition strategies, Human Engineering and MANPRINT specialist will have to be innovative in their approach to influencing the design of military systems. Each will have to get buy in from the acquisition community that human systems integration should be a primary consideration in any systems acquisition criteria. Additionally, during trade-off analyses, emphasis should be placed on the fact that proactive human-machine considerations opposed to reactive will lead to an increased savings for the budgets bottom-line by reducing design modifications. Furthermore, it will lead to increased human performance, which will positively impact overall system performance.

The intent of this paper is to highlight the recurring trends the author is seeing in support of various military systems, in hopes of starting a dialogue related to these trends and others among the HFE and MANPRINT community.

Author: Thomas W. Davis is an employee of the Army Research Laboratory's Human Research and Engineering Directorate. He is a Human Factors Engineer located at the AMCOM Missile Field Element at Redstone Arsenal in Huntsville, AL. He holds a Master's Degree in Industrial and Systems Engineering with concentration in human factors from Virginia Polytechnic Institute and State University (VA Tech). In addition, he will receive his Doctorate degree in human factors this fall from VA Tech. He supports a variety of military programs/systems to include robotics and missile systems.

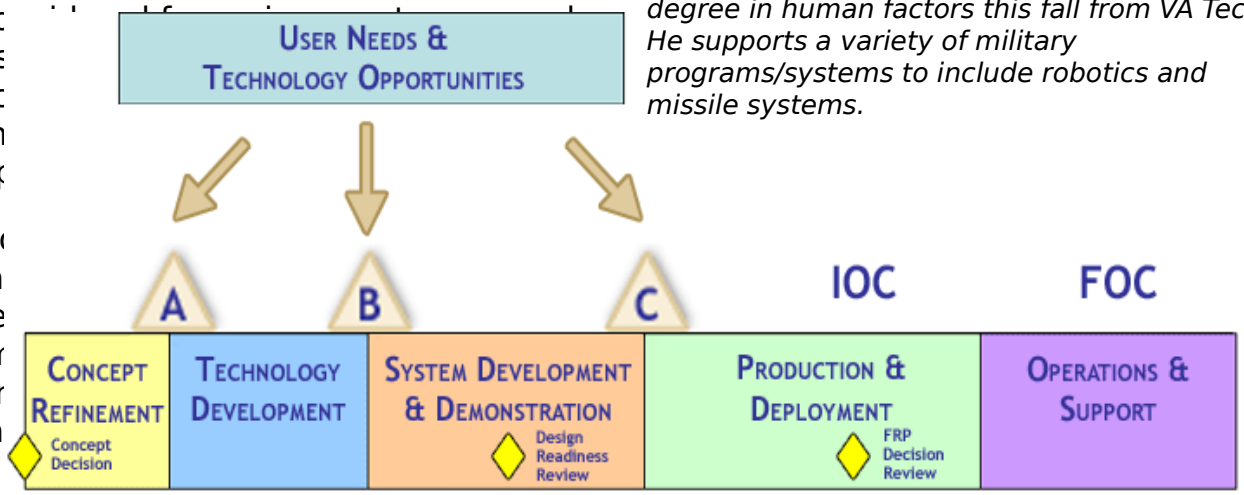

Figure 2. The Defense Acquisition Management Framework

Mr. Bolton's ASARC Memo is included to state new policy, show membership, and to advise Assessors that Draft Assessments must be complete prior to OIPT.

DAPE-MR

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OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY
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100 ARMY PENTAGON
WASHINGTON DC20310-0103

21 APR 2004

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MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Army Systems Acquisition Review Council (ASARC)

As the Chairman of the ASARC, I have conducted a review of the ASARC membership and operating procedures and decided to make changes that will enhance the efficiency and effectiveness of this deliberative body. In the future the ASARC will be a three and four-star level body (Enclosure) that concentrates upon resolving issues that remain outstanding after major Army programs proceed through the Integrated Product Team (IPT) process.

An Army-level Overarching Integrated Product Team (OIPT) (Enclosure) will be established to provide two-star level oversight to the IPT process. The Deputy Assistant Secretary for Acquisition and Systems Management will chair the Army OIPT for all Acquisition Category (ACAT) ID, IC, and II systems. The Principal Director for Enterprise Integration in the Deputy Chief of Staff and Chief Information Officer/G-6 will chair the Army OIPT for ACAT IAM and IAC systems. The goal for all Army programs is the successful resolution of all issues at the two-star and below level, and a recommendation from the OIPT for a "paper" ASARC (i.e., the signing of the decision documents without the conduct of an ASARC).

An updated template for presentations to the Army OIPT will be posted to the Acquisition Information Management (AIM) system. Additions for Systems of Systems considerations and System Metrics, Termination Criter ASARC will be focused on the issues remaining after the conclusion of the OIPT.

Claude M. Bolton, Jr.
Assistant Secretary of the Army
(Acquisition, Logistics and Technology)

Enclosure

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An updated ASARC procedural guide will be distributed to all ASARC member organizations and the Acquisition community shortly, by posting on AIM. If you have any questions, my Point of Contact for the ASARC is the ASARC Executive Secretary, Susan F. Byrne, (703) 692-1838.

Continued from page 4

ASARC Membership
Assistant Secretary of the Army (Acquisition, Logistics and Technology (Chairman)
Vice Chief of Staff, Army
Deputy Under Secretary of the Army (Operations Research)
Assistant Secretary of the Army (Financial Management and Comptroller) (ASA(FM&C)
Assistant Secretary of the Army (Installations and Environment)
Assistant Secretary of the Army (Manpower and Reserve Affairs)
Commanding General, Army Materiel Command
Commanding General, Training and Doctrine Command
Office of the General Counsel
Deputy Chief of Staff, G1
Deputy Chief of Staff, G2
Deputy Chief of Staff, G3
Deputy Chief of Staff, G4
Deputy Chief of Staff, G6
Deputy Chief of Staff, G8

Army OIPT Membership
Assistant Secretary of the Army (Acquisition, Logistics and Technology) (ASA(ALT))
Deputy for Acquisition and Systems Management (Chairman)*
Deputy Chief of Staff CIO/G6 Principal Director for Enterprise Integration*
ASA(ALT) Deputy for Integrated Logistics Support*
Commanding General, Army Test and Evaluation Command
ASA(FM&C) Director for Army Budget
ASA(FM&C) Deputy for Cost and Economics
Office of the Deputy Under Secretary of the Army (Operations Research)
Office of the ASA(FM&C)
Office of the Assistant Secretary of the Army (Installations and Environment)
Office of the Assistant Secretary of the Army (Manpower and Reserve Affairs)
Army Materiel Command
Training and Doctrine Command
Office of the General Counsel
Deputy Chief of Staff (DCS) G1, MANPRINT Directorate
Office of the DCS G2
DCS G3 (Capability Integration, Prioritization, and Analysis Directorate)
Office of the DCS G4
DCS G8 Army Architecture Integration
DCS G8 Force Development
DCS Program Evaluation and Analysis Directorate
ASA(ALT) Deputy for Plans, Programs and Resources
ASA(ALT) Deputy for Research and Technology
ASA(ALT) Deputy for Policy and Procurement
Additional Members as required

*DCS G6 will Chair Army OIPT for IT Systems. DASA-ILS will Chair Army OIPT for Sustainment Readiness Reviews

Meetings of Interest

Test Week 2005

"How Should It Transform to Meet the Needs of the Warfighter?"

6-9 June 2005

Von Braun Center,
Huntsville, Alabama

Human Systems Integration Symposium 2005

"*Enhancing Combat Effectiveness Through Warfighter Performance*"

20-22 June 2005

Sheraton National Hotel
Arlington, Virginia

2005 AUSA Annual Meeting and Exposition

"Call to Duty--230 Years of Service to Our Nation"

3-5 October 2005

Washington Convention Center
Washington, DC

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Ms. Crystal Newsome (MTC Contractor) crystal.newsome@hqda.army.mil	225-5820	703-695-5820

MANPRINT Training Schedule

MANPRINT ACTION OFFICER'S COURSE (MAOC)

CLASS	START DATE	END DATE	LOCATION
2005-704	06 Jun 2005	10 Jun 2005	Aberdeen Proving Ground, MD
2005-705	27 Jun 2005	01 Jul 2005	Ft. Bliss, TX
2005-002	11 Jul 2005	15 Jul 2005	ALMC, Ft. Lee, VA
2005-706	12 Sep 2005	16 Sep 2005	Huntsville, AL

MANPRINT TAILORED TRAINING (APPLICATIONS COURSE)

CLASS	START DATE	END DATE	LOCATION
2005-705	03 May 2005	05 May 2005	Ft. Rucker, AL
2005-001	16 May 2005	18 May 2005	ALMC, Ft. Lee, VA
2005-708	19 Jul 2005	20 Jul 2005	STRICOM, Orlando, FL
2005-706	09 Aug 2005	11 Aug 2005	Warren, MI
2005-703	23 Aug 2005	25 Aug 2005	National Capitol Region

(POC: Mr. Pat Wilson, COM (804) 765-4373, DSN 539-4373)

Did You Know?……

- Marjorie Zelko's retirement ceremony/luncheon will take place on Friday, May 27th starting at 10:00am. For details, contact Crystal Newsome at (703) 695-5820, crystal.newsome@hqda.army.mil or Teresa Hanson at teresa.hanson@hqda.army.mil.

- The next HSIS will be June 20-22. The Army, Air Force, Navy, and Marines are all working together to make a truly joint HSI Symposium. If you have the opportunity, we think it would worthwhile to attend. The MANPRINT Directorate will have its booth and personnel available for questions and comments. For more information please take a moment and go to http://www.navalengineers.org/Events/HSIS2005/HSIS05Index.html for further information.

- The U.S. Army Safety Center has changed its name to the U.S. Army Combat Readiness Center (CRC). Please visit their website at https://crc.army.mil for more information.

- The Oldest Job Aid? While wandering in the King's Library of the British Museum, I came across the astrolabe display. The purpose of the astrolabe in antiquity was to tell celestial time. This was important for navigators and others. The principle of the astrolabe was known more than 2000 years ago, but the oldest existing astrolabes date from the 10th century. Because of copyrights, I will not reproduce here the picture of the astrolabe that I saw (a reproduction), but you can see it at hyperlink http://www.astrolabe.ch/instrdet. aspx?LID=2&IID=19#. Click on the picture to enlarge it. The characteristic of this 1520 astrolabe that caught my attention was that it had a job aid on the back. An engraving shows the user the proper way to sight a star. I do not know if there are older examples of job aids. Another human factors aspect of this astrolabe is that it had indentations on its scale so that the user did not have to rely on vision alone to use it. There are lots of other interesting information about astrolabes on

MANPRINT INFORMATION

Articles, comments, and suggestions are welcomed and are to be submitted through the MANPRINT Contractor: MANPRINT Newsletter, Maximum Technology Corporation, 4910 University Square, Suite 4, P.O. Box 11817, Huntsville, AL 35814-1817; COM (256) 864-7630, FAX (256) 722-2149, E-mail: MANPRINT@hqda.army.mil

MANPRINT Web Site: http://www.manprint.army.mil

POLICY: Department of the Army, G1, ATTN: DAPE-MR, 300 Army Pentagon, Washington, DC 20310-0300, DSN 225-5848, COM (703) 695-5848.

DIRECTORY OF DESIGN SUPPORT METHODS: Defense Technical Information Center–MATRIS Office, DTIC-AM, NAS NI Bldg, 1482, Box 357011, San Diego, CA 92135-7011, DSN 735-9414, COM (619) 545-9414, E-mail: ddsm@dticam.dtic.mil, and web site: http://dticam.dtic.mil/hsi/

MANPRINT DOMAIN POCs

MANPOWER, PERSONNEL & TRAINING: Mr. Wayne Cream, U.S. Army Human Resources Command, ATTN: AHRC-PLC-M, Alexandria, VA 22332-0406, DSN 221-2026 or 221-6489, COM (703) 325-2026, FAX: (703) 325-0657, E-mail: wayne.cream@hoffman.army.mil

HUMAN FACTORS ENGINEERING: Mr. Frank R. Paragallo, Chief, Human Factors Integration Division, HRED, Army Research Laboratory, ATTN: AMSRL-HR-M, Bldg. 459, Aberdeen Proving Ground, MD 21005-5425, DSN 298-5802, COM (410) 278-5802, FAX (410) 278-0505, E-mail: frp@arl.army.mil

SYSTEM SAFETY: LTC Tom DeVine or Mr. Jim Gibson, Office of the Chief of Staff, Army Safety Office, ATTN: DACS-SF, 2211 S Clark Street, Crystal Plaza 5, Room 980, Arlington, VA 22202, DSN 329-2411 or 329-2409, COM (703) 601-2411 or (703) 601-2409, FAX (703) 601-2417, E-mail: thomas.devine@hqda.army.mil or james.gibson@hqda.army.mil

HEALTH HAZARDS: MAJ Timothy Kluchinsky, Jr., U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), ATTN: MCHB-TS-OHH, 5158 Blackhawk Road, Bldg. E1570, Aberdeen Proving Ground, MD 21010-5403, DSN 584-2925, COM (410) 436-2925, FAX (410) 436-1016, E-Mail: timothy.kluchinsky@apg.amedd.army.mil

SOLDIER SURVIVABILITY: Mr. Richard Zigler, U.S. Army Research Laboratory, ATTN: AMSRD-ARL-SL-BE, Bldg 328, Rm 228, Aberdeen Proving Ground, MD 21005-5068, DSN 298-8625, COM (410) 278-8625, FAX: 278-9337, E-mail: rziglar@arl.army.mil

The MANPRINT Newsletter is an official bulletin of the Deputy Chief of Staff, G1, Department of the Army. The Manpower and Personnel Integration (MANPRINT) program (AR 602-2) is a comprehensive management and technical initiative to enhance human performance and reliability during weapons system and equipment design, development and production. MANPRINT encompasses seven key domains: manpower, personnel, training, human factors engineering, system safety, health hazards and soldier survivability. The focus of MANPRINT is to integrate technology, people and force structure to meet mission objectives under all environmental conditions at the lowest possible life-cycle cost. Information contained in this bulletin covers policies, procedures, and other items of interest concerning the MANPRINT Program. Statements and opinions expressed are not necessarily those of the Department of the Army. This bulletin is prepared twice yearly under contract for the MANPRINT Directorate, G1, under the provisions of AR 25-30 as a functional bulletin.

READER'S RESPONSE

Use this space to record changes, additions or deletions. Send your information to the MANPRINT Contractor, Maximum Technology Corporation (MTC) by Fax (256) 722-2149 or Mail (fold on designated line and close (do not staple) with the MANPRINT Newsletter address on the Outside). If you are a MANPRINT POC for your organization, please check the MANPRINT POC block.

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